CHAPTER 5
Alternatives to the Program

The California Environmental Quality Act (CEQA) requires an evaluation of the comparative effects of a range of reasonable alternatives to a project[1] that would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects (CEQA *Guidelines,* § 15126.6(a)). The environmental impact report (EIR) must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation. The nature and scope of the alternatives to be discussed is governed by the "rule of reason" (CEQA *Guidelines,* § 15126.6(f)). A discussion on alternatives should include alternatives to the project or its location that are capable of avoiding or substantially lessening any of the project's significant effects, even if these alternatives would impede, to some degree, the attainment of the project's objectives, or would be more costly (CEQA *Guidelines,* § 15126.6(b)).

The EIR should also identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination (CEQA *Guidelines,* § 15126.6(c)). The EIR should include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the project (CEQA *Guidelines,* § 15126.6(d)). Evaluation of a "no project" alternative is required to allow decision-makers to compare the impacts of approving the project with the impacts of not approving the project. The "no project" alternative analysis should discuss existing conditions at the time the environmental analysis is commenced, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved (CEQA *Guidelines,* § 15126.6(e)).

In accordance with the above, the range of potential alternatives to the Shasta River Watershed-wide Permitting Program (Program) discussed in this Chapter include those that could feasibly accomplish most of the basic objectives of the Program but could avoid or substantially lessen one or more of the Program's significant adverse effects on the environment. Specifically, the Draft EIR considers three alternatives. Those alternatives and the specific reasons for selecting them are:

[1] For purposes of this Draft EIR the Shasta Watershed-wide Permitting Program ("Program") is the project being analyzed pursuant to CEQA.

Alternative	Reasons for Selection
1. No Program Alternative	Consideration of this alternative is mandatory.
2. Instream Flow Alternative	This alternative provides an analysis of an approach that would include all the provisions of the Program plus additional measures to increase streamflow in the Shasta River and tributaries for the benefit of coho salmon (*Oncorhynchus kisutch*).
3. Parks Creek – Upper Shasta River Bypass	This alternative presents another approach to providing increased spawning and rearing habitat for coho salmon and other salmonids in the Shasta River.

Each of the three alternatives, its potential environmental impacts, and its ability to meet basic Program objectives as compared with the Program is described below. As part of evaluation and comparison of alternatives, the CEQA *Guidelines* require that if the "no project" alternative is identified as the environmentally superior alternative, the EIR must also identify the environmentally superior alternative among the other alternatives (CEQA *Guidelines,* § 15126.6(e)(2)). A lead agency is not compelled to adopt the environmentally superior alternative. However, if a lead agency rejects an alternative that would substantially reduce the environmental impacts of the project under consideration, the lead agency must, when certifying the EIR, make findings that describe the specific reasons for rejecting the alternative. Reasons may include specific economic, legal, social, technological, or other considerations that make the alternative infeasible (CEQA *Guidelines,* § 15091(a)(3)).

5.1 Alternatives Considered but Rejected

In addition to the three alternatives selected for this analysis, the California Department of Fish and Game (CDFG) considered seven other possible alternatives. Upon consideration, however, these alternatives were rejected for one of three reasons: the alternative failed to meet most of the basic Program objectives; the alternative was found to be infeasible; or the alternative did not have the ability to avoid or substantially lessen one or more of the Program's significant adverse effects on the environment. The rejected alternatives are discussed briefly, along with the specific reasons they were rejected.

5.1.1 Rejected Alternative 1: Consistency Determination

California Fish and Game Code (Fish and Game Code), § 2080.1[2] provides that no further state authorization or approval is needed for the incidental take of a species listed as endangered or threatened under both the California Endangered Species Act (CESA) and the Endangered Species Act (ESA) if a person has obtained an incidental take permit (pursuant to ESA section 10) or Incidental Take Statement (pursuant to ESA section 7) from the Secretary of the Interior or the Secretary of Commerce, and the Director of CDFG determines that the conditions of the federal take authorization are consistent with Fish and Game Code, § 2081(b) and (c), including the requirement to fully mitigate the authorized take. If the Director makes such a determination, CDFG would issue a "consistency determination," rather than an incidental take permit (ITP). Under this alternative, CDFG would not issue the ITP and sub-permits under the Program authorizing the incidental for take of coho salmon, but instead, upon written request from individual project proponents, would review any take authorization issued by the National Marine Fisheries Service (NMFS) for coho salmon that applies to the same project for consistency with CESA. Streambed alteration agreements (SAA) would still be required for water diversions and other Covered Activities.

CDFG frequently issues consistency determinations for projects that involve incidental take of species dually-listed under CESA and ESA. However, in those instances, a federal permit (e.g., a CWA section 404 permit from the U.S. Army Corps of Engineers) has been issued for the project. In those cases, if the project could result in take of a listed species, the federal agency issuing the permit will have obtained from NMFS or the U.S. Fish and Wildlife Service (USFWS) incidental take authorization in the form of an Incidental Take Statement which NMFS or USFWS will include in its biological opinion. Coho salmon in the Program Area are listed under both CESA and ESA, but in order for SVRCD and Agricultural Operators to obtain a consistency determination from CDFG, they would need to first obtain a federal permit for the Covered Activity they want to complete, and the federal agency issuing the permit would need to consult with NMFS and obtain incidental take authorization for the activity the permit covers in accordance with ESA section 7. This assumes, of course, that the Covered Activity would require a federal permit in the first place. If a federal permit were not required and SVRCD and

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2 In part, Fish and Game Code, § 2080.1 reads as follows:

"(a) ...[I]f any person obtains from the Secretary of the Interior or the Secretary of Commerce an incidental take statement pursuant to section 1536 of Title 16 of the United States Code or an incidental take permit pursuant to section 1539 of Title 16 of the United States Code that authorizes the taking of an endangered species or a threatened species that is listed pursuant to section 1533 of Title 16 of the United States Code and that is an endangered species, threatened species, or a candidate species pursuant to this chapter, no further authorization or approval is necessary under this chapter for that person to take that endangered species, threatened species, or candidate species identified in, and in accordance with, the incidental take statement or incidental take permit, if that person does both of the following:

(1) Notifies the director in writing that the person has received an incidental take statement or an incidental take permit issued pursuant to the Endangered Species Act of 1973 (16 U.S.C.A. § 1531 *et seq*.).

(2) Includes in the notice to the director a copy of the incidental take statement or incidental take permit.

(c) Within 30 days after the director has received the notice described in subdivision (a) that an incidental take statement or an incidental take permit has been issued pursuant to the Endangered Species Act of 1973, the director shall determine whether the incidental take statement or incidental take permit is consistent with this chapter. If the director determines within that 30-day period, based upon substantial evidence, that the incidental take statement "or incidental take permit is not consistent with this chapter, then the taking of that species may only be authorized pursuant to this chapter."

Agricultural Operators wanted to obtain a consistency determination from CDFG, they would need to separately apply for an incidental take permit under ESA section 10 by submitting a Habitat Conservation Plan, obtain the permit, and then seek a consistency determination. Both processes to obtain incidental take authorization under ESA, and thereafter a consistency determination from CDFG would be costly, would take a long time (years in the case of the ESA section 10 process) to complete, and would not apply to all Agricultural Operators.

As a result, under this alternative, take authorization under CESA for the activities covered by the Program would be substantially delayed. That delay, in turn, would impede implementation of coho salmon recovery tasks and CESA compliance by Agricultural Operators, among other objectives of the Program. In the meantime, many if not all of the ongoing, historic activities the Program covers would continue along with any impacts they might have on coho salmon. Also, as mentioned above, SAAs would still be required for water diversions and other Covered Activities under this alternative. However, because CDFG may elect not to issue SAAs for projects that are not in compliance with CESA or other provisions in the Fish and Game Code under Fish and Game Code, § 1613, and each SAA issued under the Program will include the general condition that the SAA holder is responsible for complying with all applicable state laws to conduct the activity or activities the SAA covers, under this alternative, obtaining a consistency determination would in effect be a pre-requisite to obtaining a SAA or beginning the activity or activities to which the SAA applies. Such an outcome would only serve to maintain the status quo in the Program Area for a longer period of time, thereby defeating most, if not all of the Program's basic objectives. For the foregoing reasons, this alternative is not considered feasible, and therefore is rejected from further consideration.

5.1.2 Rejected Alternative 2: Adjudication of Water Rights

Statutory adjudication is a process by which the comprehensive determination of all water rights in a stream system is made by the State Water Resources Control Board (SWRCB). The process begins when a claimant petitions SWRCB for an adjudication and SWRCB finds the action necessary and in the public interest. The California Supreme Court has held that claimants or petitioners may include not only water users, but also those seeking recognition of public trust values on a stream-wide basis. If SWRCB grants the petition, SWRCB staff would investigate the matter and issue a report which would include a draft Order of Determination. A hearing would then be held on objections to the draft report, after which SWRCB would adopt a final Order of Determination and file it with the appropriate superior court. Any objections to SWRCB's final order would be heard by the court, after which the court would render a decision. The final step in the process is a decree by the court that determines all water rights within the disputed system (SWRCB, 2007). Typically, this process takes 10 to 20 years to complete.

All appropriative water rights in the Shasta River and its tributaries were adjudicated in 1932 by the Siskiyou County Superior Court, rather than SWRCB. As a result, under this alternative, the water rights the decree covers would be re-adjudicated to protect public trust values, particularly the salmonid fishery in the Shasta River and its tributaries, primarily by reducing the volume and restricting the timing of surface water diversions, as well as interconnected groundwater

withdrawals. While this alternative could be effective in avoiding or lessening some of the Program's significant impacts, it would not meet the Program's basic objectives to implement selected key coho salmon recovery tasks (other than increasing streamflow) and to facilitate compliance by the Shasta Valley Resource Conservation District (SVRCD), Agricultural Operators, and the California Department of Water Resources (DWR) with Fish and Game Code, § 1600 *et seq.* and/or CESA, which the Program would accomplish in part by establishing a watershed-wide set of terms, conditions, and mitigation measures for ongoing agricultural operations to ensure that take of coho salmon is avoided, minimized, and mitigated. Also, any re-adjudication would not apply to any water rights based on riparian claim unless the court or SWRCB[3] agreed to include those claims as part of the re-adjudication. In order to implement this alternative, there must be at least one willing party affected by the decree to petition the court or SWRCB in the first place, but that party has not been identified at this time. As mentioned above, re-opening the decree would be a very time-consuming and expensive alternative that given the multitude of interested parties would be very controversial and uncertain in its outcome. Any expense would substantially increase if SWRCB conducted the re-adjudication, and in doing so were required to comply with CEQA. Finally, it is not certain that any re-adjudication would go far enough to adequately protect public trust resources. For the foregoing reasons, this alternative is rejected from further consideration.

5.1.3 Rejected Alternative 3: Hatcheries

This alternative would involve operation of one or more hatcheries on the Shasta River to augment or replace natural reproduction of coho salmon. Rather than taking measures to ensure that natural coho salmon spawning and rearing habitat are protected and enhanced, this alternative would substitute natural reproduction and rearing with hatchery reproduction and rearing. The alternative is rejected because it does not meet two basic objectives of the Program: the implementation of selected key coho salmon recovery tasks and compliance Fish and Game Code, § 1600 *et seq.* and/or CESA by SVRCD, Agricultural Operators, and DWR in the Program Area.

5.1.4 Rejected Alternative 4: Expanded Program Area

The total area within SVRCD's boundaries is considerably larger than the Program Area, as defined for the Program. The Shasta River watershed makes up only a portion of the district, which also includes much of the Upper McCloud River watershed, the Upper Sacramento River watershed, and the Middle Klamath River watershed (SVRCD, 2001). Under this alternative, the geographic scope of the Program would be expanded to include all areas within SVRCD's boundaries.

[3] It is not clear whether the court, SWRCB, or both has authority to modify the decree. Section X of the decree (pages 243-244) provides, "That jurisdiction of this cause shall be retained for a period of three years to entertain a motion or application by the state water commission [now SWRCB], or any party affected by this judgment and decree, at any time within said three years from date of entry hereof, for a modification of the decree in so far as the same determines quantities of water, and after hearing said motion or application and any competent and admissible evidence offered in support of or against said motion or application the court may modify this decree by increasing or decreasing the quantities of water herein allowed as the interests of justice may require."

This alternative would meet most the Program's objectives because the only difference would be to expand the geographic scope of the Program. However, because two sub-basins within SVRCD's boundaries are outside of the range of anadromous salmonids and agricultural areas outside of the Shasta River watershed are few, sparse, and limited in extent, this alternative would have little additional benefit compared to the Program. Furthermore, because this alternative simply expands the geographic scope of the Program, it would not avoid or substantially lessen any of the significant impacts of the Program. For the foregoing reasons, this alternative is rejected from further consideration.

5.1.5 Rejected Alternative 5: Trap and Truck

Dwinnell Dam, located on the Shasta River approximately 37 miles upstream of its confluence with the Klamath River, was constructed in 1928 and is operated by the Montague Water Conservation District (MWCD). The dam presents a total barrier to salmonid migration. The watershed areas upstream of the dam are known or assumed to contain prime spawning and rearing habitat for salmonids (CDFG, 1997) although no habitat surveys of these streams have been conducted. CDFG estimates that the construction of Dwinnell Dam eliminated access to approximately 22 percent of the total spawning habitat formerly available to salmon and steelhead (CDFG, 1997). In addition, Lake Shastina contains populations of non-native predatory fish species that may be transferred to the Shasta River through unscreened releases.

ITP Additional SVRCD and Sub-Permitee Avoidance and Minimization Obligation J – Dwinnell Dam and the Montague Water Conservation District (Article XV) includes the requirement that MWCD prepare a feasibility study that would evaluate, among other issues, the possibility of providing fish passage at Dwinnell Dam. However, due to the warm water conditions of the reservoir and the presence of predatory species, traditional passage facilities such as a fish ladder may expose coho salmon and other anadromous salmonids to excessive temperature and predation pressures during their up- and downstream migrations through the reservoir.

This alternative would require MWCD to study the general feasibility of a trap-and-truck operation at Dwinnell Dam for the purpose of enabling upstream and downstream migration of coho salmon and other salmonids. A typical trap-and-truck operation would require a downstream collection facility to trap up-migrating adults, transporting them by truck into the upper watershed for release during the winter, and a similar facility above the reservoir to trap down-migrating smolts in the spring, transporting them to reaches downstream of the dam. Activities related to capturing, handling, transporting, and releasing adult and smolt coho and other salmonids would subject fish to a considerable amount of stress and incidental mortalities would be expected. Because an actual trap-and-truck operation at Dwinnell Dam could result in considerable take of coho salmon with dubious benefits for recovery of the species, and such take would need to be fully mitigated under CESA, it would serve no purpose to study its feasibility. For the foregoing reasons, this alternative is rejected from further consideration.

5.1.6 Rejected Alternative 6: Expanded Range of Covered Activities Alternative[4]

Under this alternative, the scope of the Program would be increased to include not only the activities of SVRCD, Agricultural Operators, and DWR, but also other types of water diversions (e.g., industrial, municipal, or domestic) and other non-agricultural activities within the Shasta River watershed, such as timber harvest, forest and ranch road building and maintenance, and grading, that have the potential to result in take of coho salmon. This alternative would also provide for purchase from willing ranchers and farmers of conservation easements over agricultural lands, lands adjacent to watercourses to establish or widen riparian buffer zones, or other lands that if protected by a conservation easement would benefit fish and wildlife species in the Program Area.

This alternative would greatly increase the number of parties eligible for participation in the Program and result in a major increase in the number of activities CDFG would need to analyze under CEQA and for which CDFG would need to issue SAAs and sub-permits. This would significantly increase CDFG's and SVRCD's workload under the Program to a degree that could make the Program infeasible. Also, because this alternative would expand the number and types of activities under the Program, it would not serve to avoid or substantially lessen the Program's potential significant effects unless those effects were offset by any conservation easements acquired under this alternative. The degree to which the conservation easement element under this alternative would further the objectives of the Program, as well as its feasibility, depends on many variables, including the number of willing sellers; purchase, transaction, and maintenance costs; available monies to cover those costs; and the location of the "conservation lands." Finally, conservation easements currently can be purchased from willing sellers outside the Program. For the foregoing reasons, it is rejected from further consideration.

5.1.7 Rejected Alternative 7: Dwinnell Dam Removal

Dwinnell Dam was completed in 1928 without provision for fish passage. As mentioned above, the dam, which creates Lake Shastina, is owned and operated by MWCD. Although it was built to impound 74,000 acre feet, the Department of Water Resources currently limits storage to 50,000 acre feet. MWCD supplies water to the City of Montague and to agricultural operators through a 60-mile long canal and ditch system. Lake Shastina receives the full flow of the upper Shasta River and its tributaries, and a portion of the flow of Parks Creek through the Parks Creek diversion ditch.

CDFG estimates that the construction of Dwinnell Dam eliminated access to approximately 22 percent of the total spawning habitat formerly available to salmon and steelhead in the Shasta River watershed (CDFG, 1997). In addition, Lake Shastina harbors populations of non-native predatory fish species that may be transferred to the Shasta River through unscreened releases.

[4] This alternative was developed partially to address scoping comments which suggested the purchase of conservation easements from farmers and ranchers to establish a sufficiently wide riparian zone for protection of coho salmon.

The National Research Council states that the benefits of removal of Dwinnell Dam for coho salmon should be seriously evaluated on the grounds that it blocks substantial amounts of coho habitat and degrades downstream habitat (NRC, 2004). The Recovery Strategy for California Coho Salmon (Coho Recovery Strategy) includes a recommendation (Task HM-2b) to conduct an assessment of options and to develop a long-term solution for fish passage at Dwinnell Dam (and also Greenhorn Dam on Greenhorn Creek, a tributary to Yreka Creek), including consideration of modification or removal of the dam (CDFG, 2004).

ITP Additional SVRCD and Sub-Permitee Avoidance and Minimization Obligation J – Dwinnell Dam and the Montague Water Conservation District (Article XV) requires MWCD, as a sub-permittee, to prepare a feasibility study to evaluate, among other issues, the possibility of providing fish passage at Dwinnell Dam. Due to the warm water conditions of the reservoir and the presence of predatory species, however, traditional passage facilities such as a fish ladder may expose coho salmon and other anadromous salmonids to excessive temperature and predation pressures during their up- and downstream migrations through the reservoir.

This rejected alternative would require MWCD, as a sub-permittee, to decommission and dismantle Dwinnell Dam and some associated facilities, in order to avoid, minimize, and mitigate take currently associated with the dam. This would restore a free-flowing river and enable passage of coho salmon and other anadromous fish to spawning and rearing habitat in the upper Shasta River and its tributaries. These streams may feature cold water, relatively unimpaired flow, abundant spawning gravel, and good riparian conditions, but habitat surveys of these streams have not been conducted. Removal of the dam and establishment of summer bypass flows would eliminate the problem of predatory warm water fish breeding in the reservoir, and would improve water quality in the Shasta River below the dam site.

The major adverse impacts associated with removal of Dwinnell Dam would include effects on existing water supply systems, loss of recreational opportunities, and effects associated with construction of new off-stream storage capacity and related diversion and conveyance features. There is insufficient information to discern the severity of other impacts, including release of sediments from behind the dam (and the quality of these sediments) and effects on flooding in the Shasta Valley, as well as the benefits of dam removal.

Decommissioning and dismantling Dwinnell Dam and some associated facilities would be feasible if it could be accomplished in a manner that would preserve the ability of MWCD to divert and deliver water. MWCD currently delivers approximately 17,000 acre feet of water per year over the six-month irrigation season (for an average of approximately 94 acre feet per day). Water conservation programs could reduce the demand for water and decrease the volume of water to be diverted, stored, and delivered. Continuation of water deliveries could possibly be accomplished through a combination of surface water diversions directly into MWCD's canal and ditch system during the spring and early summer and off-stream storage in surface reservoirs or through infiltration into an aquifer filled from high spring flows. All diversions would be screened according to NMFS – CDFG guidelines, and fish passage would be built into any diversion structure. However, even if MCWD were able to continue diverting and delivering

water without Dwinnell Dam, CDFG does not have the statutory authority to require MCWD to decommission and dismantle the dam, and it does not appear that other governmental agencies have such authority. For that reason alone, this alternative might not be feasible.

More fundamentally, Dwinnell Dam and its impacts on the hydrology and aquatic resources of the Shasta River are part of existing physical conditions in the Program Area (i.e., it is part of the baseline), which will continue with or without the Program. Hence, this alternative would not avoid or directly mitigate the impacts associated with the Program. Still, decommissioning and dismantling the dam might serve to facilitate some of the Program's objectives in regard to recovery of coho and other salmonids, but even that depends on the suitability and extent of the spawning and rearing habitat in the upper Shasta River and its tributaries that coho salmon and other salmonids would have access to if the dam were removed.

Finally, this alternative would not meet the other objectives of the Program, including, for example, compliance by Agricultural Operators with Fish and Game Code, § 1600 *et seq.* and CESA and implementation of other coho recovery tasks. That would not be the case if removing Dwinnell Dam were included as another element of the Program, but it would make little sense to do so because, as explained above, removal of Dwinnell Dam does not appear feasible in the first instance, whether by itself or as part of the Program.

Based on the foregoing, this alternative is rejected from further consideration.

5.2 Alternatives Considered

The three alternatives evaluated in this Draft EIR are described and analyzed below. The two tables at the end of this Chapter compare the alternatives with the Program. **Table 5-1** compares the impacts associated with each alternative to the Program's impacts; **Table 5-2** compares the ability of each alternative to meet the Program's objectives.

5.2.1 No Program Alternative

Alternative Description

Discussion of the "no program" alternative (No Program Alternative) must examine the existing conditions and reasonably foreseeable future conditions that would exist if the Program were not approved (CEQA *Guidelines*, § 15126.6(e)). Under the No Program Alternative, CDFG would not issue a watershed-wide ITP or enter into a watershed-wide SAA Memorandum of Understanding (MOU) and Master List of Terms and Conditions (MLTC). Instead, SVRCD, DWR, and each Agricultural Operator would need to comply with Fish and Game Code, § 1600 *et seq.* and/or CESA on an individual basis. CDFG would prepare individual ITPs and SAAs as it received notifications and ITP applications. Under this approach, CDFG would need to conduct an appropriate level of CEQA review prior to issuing each individual ITP and SAA.

Individual applicants would be responsible for reimbursing CDFG for the cost of preparing the CEQA document for their ITPs and SAAs. The time required to prepare individual CEQA

documents for a large number of agricultural diversions in the Shasta River watershed could cause construction delays for Agricultural Operators. It is likely that many Agricultural Operators could not afford or would choose not to go through with an individual permitting process, potentially resulting in some Agricultural Operators operating either out of compliance with Fish and Game Code, § 1600 *et seq.* and CESA or terminating their usual operations.

Environmental Impacts

Aesthetics

The Program would not result in any significant aesthetic impacts. Similarly, the No Program Alternative would not have significant aesthetic impacts.

Air Quality

Neither the Program nor the No Program Alternative would have a significant impact on air quality.

Biological Resources: Fisheries and Aquatic Habitat

The No Program Alternative would not provide a programmatic framework to facilitate implementation of selected key coho salmon recovery tasks, as identified in the Shasta-Scott Recovery Team Recommendations for Coho Salmon, nor feature a watershed-wide set of terms, conditions, and mitigation measures for ongoing agricultural operations. In summary, the No Program Alternative would likely result in a higher level of unauthorized and unmitigated take of coho salmon, and more severe impacts on other fish species when compared with the Program as proposed. However, compared to existing conditions without the Program, this alternative's impacts on fisheries and aquatic habitat would be the same.

Biological Resources: Botany, Wildlife, and Wetlands

The No Program Alternative would not provide a watershed-wide set of terms, conditions, and mitigation measures protecting not only coho salmon, but also riparian, terrestrial, and wetland biological resources. The result would likely be more instances of disturbance or destruction of sensitive biological resources, compared with the Program, although conditions protecting resources would be included in individual ITPs and SAAs.

Geology, Soils, and Seismicity

Neither the Program nor the No Program Alternative would be expected to have a substantial adverse impact on geology, soils, or seismicity. See the following section for geophysical effects.

Geomorphology, Hydrology and Water Quality

Because the No Program Alternative would not include watershed-wide measures to restore coho salmon habitat and to modify surface water diversions and other agricultural practices, it is likely that this alternative would involve fewer construction activities than the Program. Construction-

related impacts to streams in the Shasta River watershed would therefore likely be less widespread under this alternative.

Even if individual SAAs and ITPs issued under this alternative included measures to enhance streamflow, it is unlikely that such measures would be as well-coordinated or as widespread as those that would occur under the Program as proposed. Therefore, such measures would be unlikely to be as effective as they would be under the Program, and compared with the Program as proposed, the resulting conditions of streams and water quality would be worse. They would be the same as with existing conditions.

Land Use and Agriculture

It is likely that compliance with Fish and Game Code, § 1600 *et seq.* and CESA under the No Program Alternative would be more costly and time-consuming for Agricultural Operators. Individual Agricultural Operators would be responsible for submitting an ITP application through the standard process and notifying CDFG of diversions and work in and around the bed, banks, and channel of streams. The No Program Alternative also would not have the Program's advantage of relatively available funding to cover costs of Program requirements. Agricultural Operators and SVRCD would continue to have to seek funding from a variety of competitive funding sources (CDFG, NMFS, Natural Resources Conservation Service, and USFWS).

It is likely, therefore, that the No Program Alternative would have a greater adverse impact on maintaining a viable agricultural enterprise while simultaneously complying with Fish and Game Code, § 1600 *et seq.* and CESA. For this reason, and using the same logic as discussed in Impact 3.1-1 in Chapter 3.1, Land Use and Agriculture, it is likely that the No Program Alternative would result in a more severe impact associated with the potential pressure for agricultural land use conversion. This would be a potentially significant impact of this alternative.

Noise

Neither the Program nor the No Program Alternative would be expected to have a substantial noise impact.

Public Utilities, Service Systems and Energy

Because the No Program Alternative would not provide incidental take authorization for Covered Activities, or facilitate Agricultural Operators' compliance with Fish and Game Code, § 1600 *et seq*., this alternative would be expected to result in fewer construction projects and fewer alterations to the existing system of diverting and conveying irrigation water. Therefore, this alternative would be expected to have similar, but less severe impacts to public utilities, service systems, and energy than the Program.

Hazards and Hazardous Materials

As stated in the previous paragraph, the No Program Alternative would likely result in fewer construction projects, and would therefore be less likely to encounter previously unknown

hazardous materials, or to cause wildfire. On the other hand, more haphazard permitting and implementation of projects under this alternative could result in less uniform and less stringent application of protective measures to prevent or mitigate for such occurrences. On balance, this alternative would have about the same level of impacts of this kind as the Program.

Cultural Resources

Cultural resources impacts of the No Program Alternative would be about the same as the Program: ongoing land disturbance associated with agricultural activities and stream habitat restoration projects could cause significant impacts, but these could be reduced to less than significant with feasible mitigation measures.

Transportation and Traffic

Because this alternative would not generate substantial new traffic or affect existing roadways, it would not be expected to have a substantial adverse impact on traffic.

Mineral Resources

Because this alternative would not affect the ability to recover identified mineral deposits, it would not be expected to have significant impacts on mineral resources.

Population and Housing

There are no population and housing impacts of the Program, or of this alternative.

Public Health and Safety

Neither the Program nor this alternative would be expected to have a substantial impact on public health and safety.

Recreation

Neither this alternative nor the Program is expected to affect existing recreational uses in the Program Area, or to generate demand for new recreational uses. Therefore, neither the Program as proposed, nor this alternative, would have an impact on recreation.

Ability of the No Program Alternative to Meet Program Objectives

Although the implementation of the No Program Alternative would meet several of the stated objectives of the Program (see Table 5-2), it would not be as effective or efficient at bringing existing agricultural water diverters into compliance with Fish and Game Code, § 1600 *et seq.* and CESA. Most importantly, the No Program Alternative would be less effective at accomplishing or implementing mitigation measures identified in the ITP, accomplishing watershed-wide coordination and implementation of selected key coho salmon recovery tasks, and would not be consistent with commitments identified in the Coho Recovery Strategy.

5.2.2 Instream Flow Alternative

Alternative Description

The Instream Flow Alternative would include the Program as proposed and would also include other measures to increase streamflow in the Shasta River, including the development of off-stream surface water storage reservoirs to capture winter runoff. The stored water would be used to benefit the cold water fisheries by increasing streamflow as necessary to assist fish migration, increase rearing habitat, maintain cooler water temperatures, and improve the potential for riparian vegetation survival. All of these issues are identified in the Limiting Factors Analysis in Chapter 3.3, Biological Resources: Fisheries and Aquatic Habitat, as major factors limiting coho salmon production in the Shasta River watershed. Where practical, water may be piped or pumped from reservoirs directly into existing water conveyance systems in exchange for reductions in the volume of water diverted from the Shasta River and tributaries. The stored water would not be used to increase the existing irrigated acreage or allow for additional water to be diverted for agricultural purposes.

The Program already contains several provisions to increase instream flows, including SVRCD's ITP Flow Enhancement Mitigation Obligation (Article XIII.E.2.(a)), Additional SVRCD and Sub-Permittee Avoidance and Minimization Obligation A: Water Management (Article XV), and MLTC Conditions 25 (bypass flows at diversions).

The Shasta-Scott Pilot Program of the Coho Recovery Strategy contains additional recommendations for "water augmentation" actions for the Shasta River watershed, including the following:

- If feasible, construct large (off-stream) surface-water storage reservoirs;
- If feasible, raise the level of existing small lakes or create storage using small off-stream reservoirs rather than one large reservoir; and
- If legal and feasible, create a new diversion from the Klamath River above Irongate Dam to the Shasta Valley, to provide irrigation water to the Shasta Valley and reduce local surface water diversions and groundwater pumping.

The Instream Flow Alternative would be identical to the Program except that it would also include the additional measures from the Coho Recovery Strategy listed above. Specifically, this alternative would involve implementing those Coho Recovery Strategy recommendations regarding water augmentation which are found to be feasible and appropriate. While no single alternative water supply may be sufficient to result in significant gains in instream flows, a combination of the potential sources discussed above may provide for more suitable water flows and temperatures for rearing coho during the summer and fall months. Furthermore, until the studies are conducted to determine the feasibility of the various measures considered for development of new water supplies, the type and extent of physical impacts of this alternative cannot be determined. Therefore, the following analysis assumes that all of the additional measures listed above would be found to be feasible and appropriate, and would be implemented under this alternative in addition to all of the flow enhancement provisions of the Program as proposed.

Environmental Impacts

Aesthetics

Some of the aspects of this alternative, such as development of large reservoirs and construction of a conveyance facility to bring water from the Klamath River to the Shasta Valley, would alter the visual character of the area, and may cause a significant aesthetic impact not caused by the Program itself; thus, significant aesthetic impacts may be expected to occur under this alternative.

Air Quality

Some aspects of this alternative, particularly construction of a large surface reservoir and a pipeline to deliver water from the Klamath River to the Shasta River (Klamath pipeline), could have air quality impacts related to use of heavy equipment and earth-moving, as well as potential effects on air quality of the reservoir itself (notably the potential for production of methane, a potent greenhouse gas), not experienced by the Program. While such impacts could be at least partially mitigated, there is insufficient information available to determine whether, after mitigation, the impacts would remain significant. This alternative's air quality impacts are, therefore, potentially more severe than those of the Program as proposed, and have the potential to be significant.

Biological Resources: Fisheries and Aquatic Habitat

A new, large diversion from the Klamath River could have consequences for the fisheries of the mainstem Klamath. Since, however, the Shasta River enters the Klamath a short distance below Irongate Dam, increased coldwater flows from the Shasta into the Klamath would be expected to compensate for potential effects further upstream. Nevertheless, there could be local impacts to fisheries. In sum, this alternative could result in beneficial impacts to fisheries and aquatic habitat not associated with the Program as proposed, but could also cause significant impacts not associated with the Program.

Biological Resources: Botany, Wildlife, and Wetlands

This alternative could have an adverse impact on terrestrial and wetland biological resources. Again, most impacts of this nature would be associated with development of large surface reservoirs and construction of conveyance facilities to bring water from reservoirs to existing agricultural ditches (where practical) or from the mainstem Klamath to the Shasta Valley. Impacts could be significant and unavoidable, and more severe than with the Program.

Geology, Soils, and Seismicity

Several aspects of this alternative, including the development of one or more large reservoirs and the eventual construction of conveyance facilities to bring water from reservoirs to existing agricultural ditches (where practical) or from the mainstem Klamath to the Shasta Valley, could cause short-term and long-term erosion problems. Areas where reservoirs would be situated would have to be evaluated for dynamic (seismic) and static stability, risk of landslide, and other geological risks. In all, this alternative poses greater potential for significant impacts of this nature than the Program.

Geomorphology, Hydrology and Water Quality

This alternative would have the potential for restoring the natural hydrologic regime in some tributary streams, and perhaps in the mainstem Shasta River (if it were coupled with modification of Dwinnell Dam operations or the removal of Dwinnell Dam). However, it is unclear how high winter and spring flows would be captured for storage. Also unclear is whether such major changes could be effected given existing water rights and the 1932 Shasta River Adjudication and Proceedings Judgment and Decree. Because this alternative may seek to replace some existing diversions with other water sources that would have less of an effect on stream flows and water quality, it could be expected to have fewer and less severe impacts of this nature, compared with the Program as proposed, however, there would be the potential for significant localized impacts not associated with the Program.

Land Use and Agriculture

The Instream Flow Alternative could require the alteration of some existing land uses and land use designations in the Shasta River watershed, for example, the conversion of agricultural land or forest land to reservoirs; this could cause a significant impact not associated with the Program as proposed.

It is unclear what effect this alternative would have on the income of agricultural operations, and by extension on pressures to convert agricultural land to other uses. On the one hand, new water storage and conveyance facilities could provide a more predictable water supply in most years, and so could increase and stabilize farm income, thereby decreasing pressures to convert agricultural land to other uses. On the other hand, the new system would be expensive to construct and to operate, perhaps resulting in higher cost to Agricultural Operators for irrigation water, which would increase pressures to convert agricultural land to other uses. In all, this alternative would potentially have more impacts, including potentially significant impacts on existing land uses, including agriculture, than the Program.

Noise

Noise from equipment and activities associated with new reservoir and Klamath pipeline construction may introduce new noise sources into areas with sensitive receptors, causing a noise impact not associated with the Program.

Public Utilities, Service Systems, and Energy

The Instream Flow Alternative, with its creation of new surface reservoirs would also require, in some areas, construction of new lateral ditches and pipes, or alteration of existing ones, to convey water from the reservoir(s) to any existing conveyance ditches (where feasible). Overall, there is a potential for this alternative to have significant impacts on Public Utilities, Service Systems, and Energy, but mitigation measures may be available to reduce some or all such impacts. In summary, these impacts are likely to be more extensive and more severe than similar impacts of the Program as proposed, and there is the potential for significant unavoidable impacts.

Hazards and Hazardous Materials

Because the Instream Flow Alternative would potentially disturb more area than the Program, and involve larger, more extensive construction projects, it would have a greater chance of encountering previously unknown hazardous materials, of causing wildfire, and of an accidental spill or upset. These impacts would likely be significant, but could be mitigated to a less than significant impact with the measures specified for the Program as proposed.

Cultural Resources

Because areas of disturbance under this alternative would be greater, e.g., from constructing one or more surface water impoundments and a major pipeline, cultural resources impacts of this alternative could potentially be greater than with the Program, and would likely be significant. Depending on the location of surface water impoundments and the Klamath pipeline, impacts could be significant and unavoidable.

Transportation and Traffic

Potential transportation and traffic effects associated with the Instream Flow Alternative may include roadway impacts from heavy equipment and materials transport for reservoirs and Klamath pipeline construction and the possible need to construct new roads to reservoir sites. If a large surface water impoundment were to have recreational uses, it could cause an increase in traffic over sparsely used roadways in the Shasta Valley. In sum, transportation and traffic impacts could be significant, and may be expected to be more severe than those associated with the Program as proposed.

Mineral Resources

Neither the Program nor this alternative is expected to have significant impacts on mineral resources.

Population and Housing

There are no population and housing impacts of the Program, or of this alternative.

Public Health and Safety

Neither the Program nor this alternative would be expected to have a substantial impact on public health and safety.

Recreation

Development of a large reservoir under this alternative could create new recreational opportunities in the Shasta Valley. Changes to operations at Lake Shastina could, however, adversely affect existing recreational uses. In sum, recreational impacts could be significant, and more severe than with the Program as proposed, but could be expected to be mitigated.

Ability of the Alternative to Meet Program Objectives

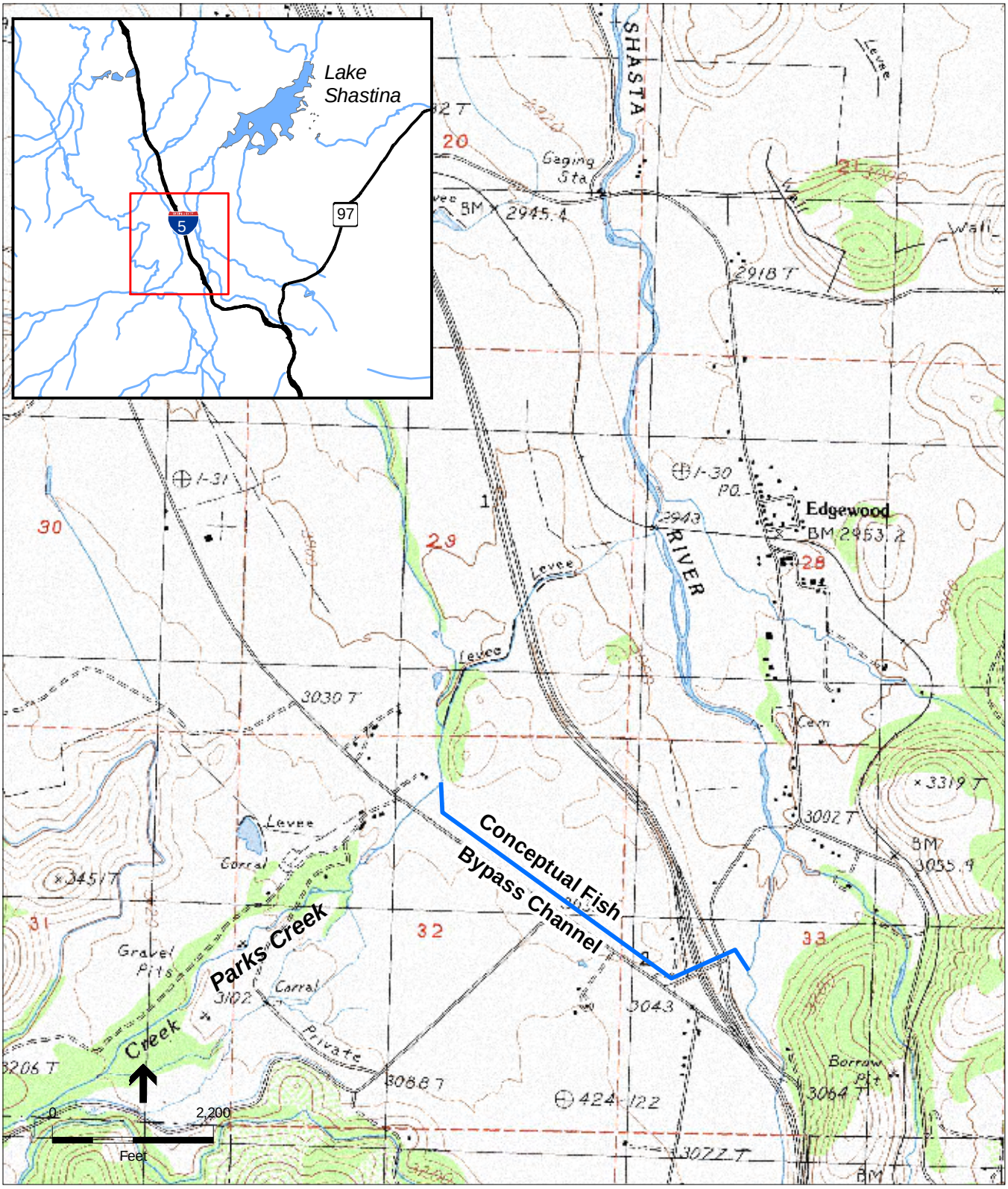
Under the Instream Flow Alternative, all of the objectives of the Program would be met and, if feasible, water augmentation measures identified in the Coho Recovery Strategy would be implemented. Where the potential for take of coho salmon still existed, such as ongoing surface water diversion and other agricultural activities and restoration actions undertaken by SVRCD, ITPs and SAAs still would be required. Impacts from this alternative, particularly those associated with reservoir and Klamath pipeline construction, would be greater than those of the Program. The feasibility, costs, and funding mechanisms for this alternative, and for its individual elements (including development of new off-stream reservoirs and any conveyance facilities) have not yet been studied, nor have such studies themselves been funded; therefore the feasibility of this alternative is questionable.

5.2.3 Parks Creek-Upper Shasta River Fish Bypass Channel

This alternative would add to the Program the additional element of fish passage to the Shasta River above Lake Shastina. Under this alternative, MWCD would be required to work with CDFG and other agencies and, if necessary, private landowners, to construct a fish bypass channel from Parks Creek to the Shasta River above the lake.

The bypass channel could be in the vicinity and upstream of the existing Parks Creek diversion operated by MWCD, but would flow in the opposite direction. The Parks Creek Diversion flows from Parks Creek into the Shasta River; the fish bypass channel would flow from the Shasta River into Parks Creek. The channel would be operated during spawning migration and smolt out-migration, i.e., approximately October 1 to June 1. During spawning migration coho salmon and other anadromous species could migrate up Parks Creek to the point where the bypass channel would enter Parks Creek as a tributary. Fish would have the opportunity to continue up Parks Creek, or into the bypass channel and thence into the upper Shasta River. During smolt out-migration, fish would travel down the bypass channel into Parks Creek, and from there to the mainstem Shasta River below Dwinnell Dam. It would be necessary to place fish screens on the mainstem Shasta just downstream of the bypass channel to prevent smolts from entering Lake Shastina, and to prevent spawners from straying downstream. Assuming the channel would enter Parks Creek above the existing diversion, a fish screen would be necessary on the Parks Creek diversion to prevent smolts from returning to the Shasta River. MWCD is currently investigating the feasibility of installing a fish screen at this location. A preliminary conceptual alignment for the Parks Creek-Upper Shasta River Fish Bypass Channel is shown in **Figure 5-1**. In this figure, the channel crosses Interstate 5 at an existing underpass (at the Edgewood-Gazelle exit off of Interstate-5) and continues along Old Highway 99 for most of its length.

A determination of the technical feasibility of a Parks Creek-Upper Shasta River Fish Bypass Channel is beyond the scope of this Draft EIR. Preliminarily, there appear to be two major technical issues: 1) maintenance of an adequate flow through the channel during the fall spawning migration to attract fish and to sustain adequate conditions for fish survival and passage within the channel itself; and 2) screening both the mainstem Shasta below the bypass channel and also



Project Name . 206063

SOURCE: USGS, 2005; ESA, 2006

Figure 5-1
Parks Creek-Upper Shasta River Fish Bypass:
Preliminary Conceptual Alignment

the existing Parks Creek diversion channel. In addition, this alternative would require establishment of a right-of-way for the channel; the land through which the by-pass would flow is in both public and private ownership. While these are potentially substantial impediments to the implementation of this alternative, they do not necessarily render it infeasible. While this alternative could affect existing water rights, it is assumed that water diverted out of the mainstem Shasta into Parks Creek would be diverted back to the mainstem Shasta through the existing diversion channel.

Environmental Impacts

Aesthetics

Construction of a Parks Creek-Upper Shasta River fish bypass channel would not be expected to affect scenic views or to alter substantially the character of the area, and would therefore not be expected to have a significant aesthetic impact. Construction and maintenance of a fish screen on the Shasta River could be visible from Interstate 5 or from local roads, but likely would cause a less-than-significant impact that would not be more severe than impacts under the Program as proposed.

Air Quality

Construction of a Parks Creek-Upper Shasta River fish bypass channel would not be expected to have significant air quality impacts. The only associated air quality impacts would be short-term, relatively minor emissions related to construction of the bypass channel. Air quality impacts would therefore be the same as with the Program as proposed.

Biological Resources: Fisheries and Aquatic Habitat

Construction of a Parks Creek-Upper Shasta River fish bypass channel would likely have a positive net benefit for all three of the anadromous species that inhabit the Shasta River watershed. There would, however, likely be some take associated with the fish screens on the Shasta River and on Parks Creek. With good design, construction, and operation of screens (assuming they are feasible), take could be avoided or minimized. Restoring access to miles of spawning and rearing habitat would be expected to mitigate for any take that would occur. Overall, this alternative would have a greater net benefit for coho salmon and other salmonids than the Program as proposed.

Biological Resources: Botany, Wildlife, and Wetlands

Construction of a Parks Creek-Upper Shasta River fish bypass channel could have an impact on other biological resources, depending on the alignment of the bypass channel. It is likely that any such impacts would be limited to a small area and could be mitigated to less than significant. Overall, impacts of this nature would be abut the same as with the Program as proposed.

Geology, Soils, and Seismicity

Construction of a Parks Creek-Upper Shasta River fish bypass channel would not be expected to have a significant impact on soil stability or on geologic features, and therefore – like the Program itself – would not be expected to have a significant impact of this kind.

Geomorphology, Hydrology and Water Quality

Construction of a Parks Creek-Upper Shasta River fish bypass channel would alter the flow of the Shasta River and Parks Creek, and would create a new artificial channel. Flows necessary to attract migrating adults would have to be maintained; these may range from 5 to 10 cfs. As noted in the description of this alternative, the same volume of water could be re-directed to the Shasta River through the existing diversion ditch.

The presence of the bypass channel, and of the associated fish screen, could also have an effect on sediment transport in both the Shasta River and Parks Creek. Such effects would have to be evaluated in the study of this alternative's feasibility. Until then, it should be assumed that this alternative could have significant effects on sediment transport or streamflow, and that such effects may be greater than the Program as proposed.

Land Use and Agriculture

The bypass channel would not be expected to have a deleterious effect or to be incompatible with existing land uses along its alignment, nor to conflict with local land use and environmental plans and policies, though it would be necessary to secure a right-of-way for the channel over both private and public lands. As it would not affect existing water rights, this alternative would not be expected to have a significant adverse impact on agriculture, beyond that anticipated for the Program as proposed. In sum, effects of this nature would be the same as with the Program as proposed.

Noise

Noise from equipment and activities associated with construction of a Parks Creek-Upper Shasta River fish bypass channel could cause minor, short-term noise impacts not associated with the Program as proposed. Such impacts would be expected to be less than significant, and no greater than the Program as proposed.

Public Utilities, Service Systems, and Energy

This alternative would not be expected to have significant adverse impacts on public utilities, service systems, or energy, beyond those of the Program as proposed. This alternative would not affect MCWD's ability to delivery water.

Hazards and Hazardous Materials

It is possible that previously unknown hazardous materials could be unearthed and released to the environment during construction of the bypass channel. Mitigation measures specified for the Program would apply to this alternative as well, and would be expected to reduce any such impact to less than significant.

Cultural Resources

It is possible that previously unknown cultural resources or human remains could be unearthed during excavation of the bypass channel. Mitigation measures specified for the Program would apply to this Program component as well, and would be expected to reduce any such impact to less than significant.

Transportation and Traffic

Because the alignment of the bypass channel would have to cross Interstate 5, and perhaps also one or more local roads (such as Edgewood Road) there would be the potential for short-term disruption of traffic, which could result in traffic delays. Any disruption would be expected to be brief and a less-than-significant impact.

Mineral Resources

Neither the Program nor this alternative is expected to have significant impacts on mineral resources.

Population and Housing

Assuming that the alignment of the bypass channel would not pass through or near existing housing, this alternative would not have an impact on population and housing; similarly, the Program as proposed would not have an impact on population and housing.

Public Health and Safety

Neither the Program nor this alternative would be expected to have a substantial impact on public health and safety.

Recreation

Since no recreational facilities exist in the vicinity of the possible alignment of the bypass channel, and since neither the Shasta River in the affected reach nor Parks Creek has recreational use, this alternative would not be expected to have an adverse impact on existing recreational uses; such impacts would be the same as with the Program as proposed.

Ability of the Alternative to Meet Program Objectives

Because the Parks Creek-Upper Shasta River Fish Bypass Alternative would simply add a new element to the Program (i.e, a bypass channel), it would meet the same objectives as the Program, including reducing take while allowing for the continuation of agricultural operations. In addition, if the technical and legal hurdles could be overcome to implement this alternative, it would likely have a greater benefit for coho salmon and other native fisheries in the Shasta River watershed by restoring access to habitat currently unavailable due to Dwinnell Dam and Lake Shastina.

5.3 Environmentally Superior Alternative

As part of evaluation and comparison of alternatives, the CEQA *Guidelines* require that if the "no project" alternative is identified as the environmentally superior alternative, the EIR must also identify the environmentally superior alternative among the other alternatives (CEQA *Guidelines,* § 15126.6(e)(2).) The No Program Alternative is not identified in this Draft EIR as the environmentally superior alternative and, as a result, no environmentally superior alternative is identified. However, for the reasons highlighted above, CDFG generally believes the Program is environmentally superior to the alternatives considered here.

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TABLE 5-1
IMPACTS AND SIGNIFICANCE LEVELS OF ALTERNATIVES IN COMPARISON WITH THE PROGRAM

Impact and Significance Level with Mitigation Measures Identified in This Report	No Program	Instream Flow	Parks Creek Bypass
Land Use and Agriculture			
Impact 3.1-1: The Program could result in the conversion of agricultural land within the Shasta River watershed to non-agricultural uses (Less than Significant).	Greater Impact	Greater Impact	Same Impact
Geomorphology, Hydrology and Water Quality			
Impact 3.2-1: Certain construction activities performed under the Program could result in increased erosion and sedimentation and/or pollutant (e.g., fuels and lubricants) loading to surface waterways, which could increase turbidity, suspended solids, settleable solids, or otherwise decrease water quality in surface waterways (Less Than Significant with Mitigation).	Lesser Impact	Greater Impact	Greater Impact
Impact 3.2-2: Certain instream structures proposed to increase fish habitat as part of the Program would be installed within a flood hazard area and could impede or redirect flood flows (Less Than Significant).	Lesser Impact	Same Impact	Same Impact
Impact 3.2-3: Installation and operation of instream structures permitted under the Program could alter channel stability and degrade water quality by increasing turbidity downstream (Less Than Significant with Mitigation).	Same Impact	Same Impact	Same Impact
Impact 3.2-4: The Program could result in an increase in the extraction of groundwater, which could contribute to decreased baseflows and increased ambient water temperatures in the Shasta River and its tributaries (Less Than Significant).	Lesser Impact	Lesser Impact	Same Impact
Biological Resources: Fisheries and Aquatic Habitat			
Impact 3.3-1: Construction, maintenance, and other instream activities associated with various Covered Activities may result in impacts to fisheries resources and their habitat (Less Than Significant with Mitigation).	Greater Impact	Same Impact	Same Impact
Impact 3.3-2: Increased extraction of groundwater could contribute to decreased baseflows and increased ambient water temperatures in the Shasta River and its tributaries, thereby impacting coldwater fish habitat (Less Than Significant).	Lesser Impact	Lesser Impact	Same Impact
Biological Resources: Botany, Wildlife, and Wetlands			
Impact 3.4-1: The Program could result in impacts to special-status plant or animal species (Less Than Significant with Mitigation).	Greater Impact	Greater Impact	Same Impact
Impact 3.4-2: Construction of new and maintenance and repair of existing stream access and crossings could result in impacts to special-status plant or animal species (Less Than Significant).	Greater Impact	Same Impact	Same Impact
Impact 3.4-3: ITP Covered Activity 10, the grazing of livestock within the bed, bank, or channel of a stream different from current operations (i.e., not part of baseline conditions), could impact sensitive habitat and special-status species (Less Than Significant with Mitigation).	Greater Impact	Same Impact	Same Impact
Impact 3.4-4: ITP Covered Activities may result in incidental discharge of fill into wetlands under federal jurisdiction causing temporary direct and indirect impacts to wetland function (Less Than Significant).	Greater Impact	Greater Impact	Same Impact
Impact 3.4-5: Water efficiency measures required by the Program could in some instances significantly impact nesting special-status birds (Less Than Significant with Mitigation).	Greater Impact	Same Impact	Same Impact

Comparison of severity of impacts of Alternatives with impacts of the Program, as mitigated in this EIR.

Greater Impact = The Alternative would have a greater (or less favorable) impact than under the proposed Program.
Lesser Impact = The Alternative would have a lesser (or more favorable) impact than under the proposed Program.
Same Impact = The Alternative would have about the same level of impact as the proposed Program.

This table presents a comparison of environmental impacts that were identified under the proposed Program with each of the Alternatives. Any additional environmental impacts that would potentially occur under each of the Alternatives are presented in the text discussion.

TABLE 5-1 (continued)
IMPACTS AND SIGNIFICANCE LEVELS OF ALTERNATIVES IN COMPARISON WITH THE PROGRAM

Impact and Significance Level with Mitigation Measures Identified in This Report	No Program	Instream Flow	Parks Creek Bypass
Cultural Resources			
Impact 3.5.1: Impacts to known and unknown cultural resources may result either directly or indirectly during the implementation and operational phases of a Covered Activity under the Program (Less Than Significant with Mitigation).	Same Impact	Greater Impact	Same Impact
Impact 3.5.2: Covered Activities could adversely affect known or unknown paleontological resources (Less Than Significant with Mitigation).	Same Impact	Greater Impact	Same Impact
Impact 3.5.3: Covered Activities could result in damage to previously unidentified human remains (Less Than Significant).	Same Impact	Greater Impact	Same Impact
Hazards and Hazardous Materials			
Impact 3.6-1: Construction activities could result in discovery and release of previously unidentified hazardous materials into the environment (Less Than Significant with Mitigation).	Same Impact	Greater Impact	Same Impact
Impact 3.6-2: Program construction activities could ignite dry vegetation and start a wildland fire (Less Than Significant with Mitigation).	Same Impact	Greater Impact	Same Impact
Public Utilities, Service Systems and Energy			
Impact 3.7-1: The Program could result in the modification or expansion of existing water supply systems (Less than Significant).	Lesser Impact	Greater Impact	Greater Impact
Impact 3.7-2: Construction activities could inadvertently contact underground utility lines and/or facilities during excavation and other ground disturbance, possibly leading to short-term utility service interruptions (Less than Significant).	Lesser Impact	Greater Impact	Same Impact
Impact 3.7-3: Replacement of gravity-based surface water diversions with diversions or wells utilizing pumps, would increase power consumption and air emissions (Less Than Significant).	Lesser Impact	Greater Impact	Same Impact
Impact 3.7-4: Construction activities and water pumping associated with Covered Activities and ITP mitigation measures would generate greenhouse gas emissions, which would make a contribution to global warming (Less than Significant.	Lesser Impact	Greater Impact	Same Impact
Aesthetics Program would have no significant impacts	Same Impact	Greater Impact	Same Impact
Air Quality Program would have no significant impacts	Same Impact	Greater Impact	Same Impact
Geology, Soils and Seismicity Program would have no significant impacts	Same Impact	Greater Impact	Same Impact
Noise Program would have no significant impacts	Same Impact	Greater Impact	Same Impact
Public Health and Safety Program would have no significant impacts	Same Impact	Same Impact	Same Impact

Comparison of severity of impacts of Alternatives with impacts of the Program, as mitigated in this EIR.

Greater Impact = The Alternative would have a greater (or less favorable) impact than under the proposed Program.
Lesser Impact = The Alternative would have a lesser (or more favorable) impact than under the proposed Program.
Same Impact = The Alternative would have about the same level of impact as the proposed Program.

This table presents a comparison of environmental impacts that were identified under the proposed Program with each of the Alternatives. Any additional environmental impacts that would potentially occur under each of the Alternatives are presented in the text discussion.

TABLE 5-1 (continued)
IMPACTS AND SIGNIFICANCE LEVELS OF ALTERNATIVES IN COMPARISON WITH THE PROGRAM

Impact and Significance Level with Mitigation Measures Identified in This Report	No Program	Instream Flow	Parks Creek Bypass
Transportation and Traffic	Same Impact	Greater Impact	Same Impact
Program would have no significant impacts			
Mineral Resources	Same Impact	Same Impact	Same Impact
Program would have no significant impacts			
Population and Housing	Same Impact	Same Impact	Same Impact
Program would have no significant impacts			
Recreation	Same Impact	Greater Impact	Same Impact
Program would have no significant impacts			

Comparison of severity of impacts of Alternatives with impacts of the Program, as mitigated in this EIR.

Greater Impact = The Alternative would have a greater (or less favorable) impact than under the proposed Program.
Lesser Impact = The Alternative would have a lesser (or more favorable) impact than under the proposed Program.
Same Impact = The Alternative would have about the same level of impact as the proposed Program.

This table presents a comparison of environmental impacts that were identified under the proposed Program with each of the Alternatives. Any additional environmental impacts that would potentially occur under each of the Alternatives are presented in the text discussion.

TABLE 5-2
ABILITY OF THE PROGRAM AND ALTERNATIVES TO MEET PROGRAM OBJECTIVES

Ability of Alternatives to Meet Program Objectives	Proposed Program	No Program Alternative	Instream Flow Alternative	Parks Creek Bypass
SVRCD's Objectives				
Support landowner activities (both private and public) in order to enhance the conservation and economic stability of Siskiyou County's natural resources.	Yes	No	Yes	Yes
Assist Agricultural Operators in completing projects consistent with the tasks identified in the "Recovery Strategy for California Coho Salmon."	Yes	No	Yes	Yes
Assist Agricultural Operators in meeting the requirements of Fish and Game Code, § 1600 *et seq.* and CESA by working with CDFG to develop a Program that streamlines the process to obtain streambed alteration agreements (SAA) under Fish and Game Code, § 1600 *et seq.* and incidental take authorization under CESA.	Yes	No	Yes	Yes
Comply with Fish and Game Code, § 1600 *et seq.* and CESA while performing instream and/or near stream coho salmon restoration activities.	Yes	No	Yes	Yes
Provide incentives for Agricultural Operators in the Shasta River watershed to implement coho salmon recovery tasks.	Yes	No	Yes	Yes
Increase the viability of coho salmon and other plant, fish and wildlife resources in the Shasta River watershed by improving water quality and riparian habitat, minimizing any adverse effects from agricultural activities, and restoring habitat by providing a clear set of activities and conditions to Agricultural Operators.	Yes	No	Yes	Yes
Protect and improve the biological functioning of the Shasta River watershed and natural resources while maintaining the economic viability of agriculture.	Yes	No	Yes	Yes
Implement the permit conditions identified in the Program for coho salmon and other stream resources in the Shasta River watershed.	Yes	No	Yes	Yes
CDFG's Objectives				
Fulfill the commitment to develop a permitting framework within the context of the Shasta-Scott Pilot Program in the "Recovery Strategy for California Coho Salmon."	Yes	No	Yes	Yes
Work with SVRCD and Agricultural Operators to develop a watershed-wide permitting program that covers agricultural water diversions and other agricultural activities related to those diversions in the Shasta River watershed.	Yes	No	Yes	Yes
Protect and conserve coho salmon when authorizing activities in the Shasta River watershed that may affect the species.	Yes	No	Yes	Yes
Eliminate unauthorized take of coho salmon caused by water diversions in the Shasta River watershed and avoid, minimize and fully mitigate take of coho salmon incidental to valid water diversions, recovery actions, and other lawful activities.	Yes	No	Yes	Yes
Implement selected key coho salmon recovery tasks that are essential to improving habitat conditions for coho salmon in the Shasta River watershed.	Yes	No	Yes	Yes
Bring existing agricultural water diverters into compliance with Fish and Game Code, § 1600 *et seq.* and CESA.	Yes	No	Yes	Yes

TABLE 5-2 (continued)
ABILITY OF THE PROGRAM AND ALTERNATIVES TO MEET PROGRAM OBJECTIVES

Ability of Alternatives to Meet Program Objectives	Proposed Program	No Program Alternative	Instream Flow Alternative	Parks Creek Bypass
Agricultural Operators' Objectives				
Protect and conserve coho salmon and other plant, fish, and wildlife resources while maintaining the economic viability of their agricultural operations in the Shasta River watershed.	Yes	No	Yes	Yes
Comply with Fish and Game Code, § 1600 *et seq.* and CESA in conducting the activities the Program covers subject to those statutes.	Yes	Partly	Yes	Yes
Department of Water Resources Objective				
Implement the Shasta River Decree pursuant to applicable provisions in the California Water Code	Yes	Partly	Yes	Yes
Ensure watermastering activities are in compliance with CESA	Yes	Partly	Yes	Yes
Verify that watermastered diverters are is in compliance with their respective adjudicated water right(s).	Yes	Partly	Yes	Yes
Work with CDFG to avoid or minimize the stranding of coho salmon when CDFG determines that a permitted water diversion is causing or will cause stranding.	Yes	Partly	Yes	Yes

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